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The CHIP-BUD METHOD of PROPAGATING VINIFERA GRAPE VARIETIES on ROOTSTOCKS

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UNITED STATES DEPARTMENT OF AGRICULTURE

The CHIP-BUD METHOD of PROPAGATING VINIFERA GRAPE VARIETIES on ROOTSTOCKS

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Vinifera grape varieties are susceptible to root damage from the grape phylloxera and the root knot nematode. These pests may seriously weaken or kill vinifera vines growing on their own roots. Injury can be reduced to a minimum by grafting the desired vinifera variety on resistant rootstocks.

Chip budding is the recommended method of establishing vinifera vines on resistant rootstocks. This method is preferable to cleft or whip grafting because it permits prompt rebudding if the initial bud fails to unite with the stock. When a cleft or whip graft fails, the stock plant often dies.

If you use reasonable care in chip budding, at least 90 percent of the buds should unite with the stock and grow successfully.

Vinifera varieties budded on rootstocks come into bearing about as soon as they do when grown on their own roots. They usually produce a small crop in the third summer after planting the rootstock and a normal crop in the fourth summer.

ROOTSTOCKS

You can buy rootstocks—rootings—of resistant species from commercial nurseries or you can grow your own rootstocks.

For growing your own rootstocks, make 12- to 16-inch hardwood cuttings of grape varieties that you know are resistant to damage from the grape phylloxera and the root knot nematode. Plant the cuttings vertically with one bud exposed and grow them in a nursery for a year.

You can plant the hardwood cuttings directly in the vineyard to establish the vines in their permanent positions. However, a variable percentage of cuttings will fail to take root. It is better to root the cuttings first and transplant them to the vineyard as dormant rootings.

In late winter or early spring, dig the rooted cuttings. Prune the roots to about 6 inches in length. Remove all buds from the below-ground portion of the rooting to prevent growth of stock suckers.

Prune the top shoot back to one or two spurs containing two buds each. Then plant the rootings in the vineyard. Allow about 3 inches of the original stock to protrude above ground; the vinifera bud chip will be inserted in this original stock.

BUD STICKS

From the current season's growing shoots, cut sticks containing mature buds. The buds are mature if both the buds and the wood are brown.

Be sure the scion mother plant—the variety you wish to propagate—is free of virus diseases. And since grape mutations (sports) are known to occur, cut the sticks from vines bearing fruit and foliage characteristic of the desired vinifera variety.

It is best to cut fresh bud sticks as they are needed. Protect them from drying by immersing them in water, wrapping them in damp cloth or burlap, or placing them in plastic bags.

If bud sticks cannot be used immediately, they can be stored in a refrigerator for several months until needed. Wrap them in damp cloth, place them in a freezer bag, and store them at temperatures just above freezing.

WHEN TO CHIP BUD

Chip bud when the vines are actively growing. The best time is during late summer or early fall. Earlier summer budding is undesirable because the buds frequently begin growth immediately and then fail to mature enough to withstand the winter cold.

Budding in early spring as the vines start growth in their second season is nearly as successful as early-fall budding. Earlier chip bud failures may be rebudded at this time. Dormant buds may be collected in winter and kept in a refrigerator at 32° F. until needed. Late-spring budding is undesirable; delay in budding markedly reduces the top growth the first season.

HOW TO CHIP BUD

Select a smooth spot on the stock 1 to 2 inches above the soil level. This is where the scion bud should be inserted. Starting at this spot, make an oblique downward cut into the stock as illustrated in figure 1. Then, ¾ to 1 inch above the first cut, make another cut, at an acute angle, that meets the first cut at its lower end. Remove the chip that results.

Repeat this procedure on the bud stick. Start the bottom cut just below a bud. Start the second cut above the bud and extend it downward behind the bud. The chip containing the bud and the cut in the rootstock should be as near the same size as possible.

Now push the chip bearing the bud into the notch on the rootstock. Match the cambium layers—the line between bark and wood—as closely as you can.

Hold the bud in place by wrapping it with a rubber budding strip. Start wrapping above the bud and work downward. This forces the

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Figure 1.—Chip-budding operation: *A*, Cutting the chip in the stock plant; *B*, chip removed from the stock; *C*, cutting a bud from the vinifera variety; *D*, inserting the vinifera bud in the stock.

bud chip firmly into the notch on the stock.

Then cover the budded part of the stock with 6 to 8 inches of moist soil. This moist soil protects the bud from drying while it is uniting with the stock.

CARE OF VINES AFTER BUDDING

Leave the soil mounded around fall-budded stocks through the winter. Though chip buds inserted in fall soon unite with the stock, they do not begin to grow until spring.

When the stock plant begins to grow in spring, remove the mound of soil and inspect the bud. If it is dead—shriveled and dry—rebud the stock immediately. Cut a new notch on the stock for the new bud chip.

If the bud is alive, cut off the stock plant an inch or two above the bud chip. Be careful not to injure the bud or bud chip when you make this cut.

Carefully trim off any roots growing from the scion bud and cut the budding strip below the bud.

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Figure 2.—Care after budding: *A*, Chip-budded stock covered with moist soil; *B*, cutting back the stock plant to a point 1 inch above the bud; *C*, covering the bud with sand; *D*, growth from bud trained to a single cane.

The soil need be left around spring-budded vines only a short time; the bud usually starts growing within 2 to 3 weeks. When it begins to grow, remove the soil mound, cut off the stock, and cut the budding strip.

After cutting the tops from fall- or spring-budded stocks cover the stump again with 1 to 2 inches of loose soil. If your soil is heavy and tends to harden as it dries, use coarse sand to cover the buds. This prevents a hard layer from forming over the buds and permits a straight shoot to develop.

A good way to cover the bud with sand is as follows: Cut both ends

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Figure 3.—**Scion roots growing from a bud union that was accidentally covered with soil. These roots should be removed.**

from a No. 2½ can. Place the can around the budded vine stump and fill it with sand to a depth of 1 or 2 inches above the bud. Mound moist soil around the can, then remove the can. This leaves a sand core in the soil mound.

Several shoots may develop from the vinifera bud. Let them grow to 8 to 10 inches in length, then use a sharp knife to take off all but one vigorous upright. These vigorously growing shoots are tender and easily broken. Use care when removing the excess shoots and laterals to prevent breaking the shoot you wish to save.

The remaining shoot can be trained to form the permanent trunk of the vine.

Remove the mounded soil from the base of the vine when you prune off the excess shoots.

A straight trunk of proper height for training can be established during the first summer's growth. Summer training depends on the form of vine you want and the trellis system you plan to use.

Inspect the bud unions yearly and remove any scion roots that may form. If they are not removed, scion roots are likely to dominate the rootstock, and the vine again will become susceptible to damage from the grape phylloxera and the root knot nematode.

Growth Through Agricultural Progress

This leaflet supersedes Leaflet 173, "The Bud-Graft Method of Propagating Vinifera Grape Varieties on Rootstocks."

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